REMARKS

In the Office Action, dated April 7, 2004, the Examiner objected to the abstract and disclosure as containing informalities. The Examiner further objected to claim 13 as allegedly missing punctuation. The Examiner also rejected claims 1, 3, 4, 6, 7, 9, 10, 12, 13, 15, 16, 18 and 19 under 35 U.S.C. §103(a) as allegedly being unpatentable over U. S. Patent No. 5,822,309 (hereinafter "AYANOGLU") in view of U.S. Patent No. 5,933,425 (hereinafter "IWATA"). The Examiner further rejected claims 2, 5, 8, 11, 14 and 17 under 35 U.S.C. §103(a) as allegedly being unpatentable over AYANOGLU in view of IWATA and further in view of U.S. Patent No. 6,347,078 (hereinafter "NARVAEZ-GUARNIERI").

By way of this amendment, Applicants have amended claims 13 and 18 to improve form. Claims 17 and 18 have been amended to correct their dependencies. The specification has been amended to correct an informality. New claims 20-23 have been added. No new matter has been added by way of the present amendment. Reconsideration of the outstanding rejection of pending claims 1-19 is respectfully requested in view of the amendments above and the following remarks.

In paragraph 1, the Office Action objects to the abstract, asserting that the word "least" is missing between the words "at" and "one" in line 1. Applicants submit herewith a replacement abstract that inserts the word "least" in the location suggested by the Examiner. Withdrawal of this objection is, therefore, respectfully requested.

In paragraph 2, the Office Action objects to the disclosure, asserting that the word "onced" on page 16, line 5 should be "once." Applicants have amended this portion of the specification in accordance with the suggestion of the Examiner. Withdrawal of this objection is respectfully requested.

In paragraph 3, the Office Action objects to claim 13 as missing punctuation between the words "router" and "the" on line 6. Applicants have inserted a comma between the two words noted by the Office Action, thus, supplying the appropriate punctuation. Withdrawal of this objection is, therefore, respectfully requested.

In paragraph 6, the Office Action rejects pending claims 1, 3, 4, 6, 7, 9, 10, 12, 13, 15, 16, 18 and 19 under 35 U.S.C. §103(a) as allegedly being unpatentable over AYANOGLU in view of IWATA. Applicants respectfully traverse and submit that the Office Action has failed to establish a *prima facie* case of obviousness.

Claim 1 recites a method of assigning virtual circuit identifiers for routing data in a network comprising a plurality of nodes interconnected by links of different data rates. The method includes receiving link state information at a first node of the plurality of nodes, where the link state information comprises link data rate information. The method further includes determining whether the link data rate information indicates if the links interconnecting the plurality of nodes satisfy a threshold data rate. The method also includes assigning virtual circuit identifiers to nodes in the network based on whether the link data rate information indicates that the links satisfy the threshold data rate.

As one requirement for establishing a *prima facie* case of obviousness, the reference (or references when combined) cited by the Office Action must teach or suggest all of the claim features. *In re Vaeck*, 947 F.2d 488, U.S.P.Q.2d 1438 (Fed. Cir. 1991). See M.P.E.P. § 2143. Applicants respectfully submit that the references cited by the Office Action, either singly or in combination, do not teach or suggest each and every feature of claim 1.

For example, neither AYANOGLU nor IWATA discloses "assigning virtual circuit identifiers to nodes in the network based on whether the link data rate information indicates that the links satisfy the threshold data rate." In rejecting claim 1, the Office Action (page 3) asserts that AYANOGLU discloses "a system and method of assigning virtual circuit identifiers for routing of data in an ad-hoc network" in which "links are assigned virtual path identifiers (VPIs) and virtual circuit identifiers (VCIs) that are communicated to the mobile stations upon the completion of a Quality of Service (QoS) check..." The Office Action (page 3) further cites to column 11, lines 28-52 and asserts the "QoS check determines whether QoS parameters (thresholds) such as peak and average bandwidth, latency, jitter, etc. are satisfied by the links of the network on a hop-by-hop basis." The Office Action additionally cites to column 11, lines 39-42 and alleges that "if average bandwidth is one of the QoS parameters (thresholds) specified, a node (PBS III) will check for the availability of the requested bandwidth (link state

information) on its outgoing port." The Office Action (page 3), however, admits that AYANOGLU does not disclose link state information that includes link data rate information. The Office Action, though, alleges (page 3) that IWATA discloses the claimed link data rate information.

The Office Action, thus, appears to be alleging that AYANOGLU discloses the assignment of virtual circuit identifiers to nodes in the network based on whether QoS information indicates that it satisfies a threshold rate, but does not disclose the case where the QoS information includes link data rate information. Applicants respectfully traverse and submit that AYANOGLU discloses the assignment of virtual circuit identifiers to nodes in the network *prior* to the determination of any type of QoS parameters and, thus, does not disclose the assignment of virtual circuit identifiers based on any type of QoS parameter, as the Office Action appears to be alleging.

Column 11, line 1 through column 12, line 31 and FIG. 10 disclose the VCI assignment and QoS determination process of AYANOGLU. At column 11, lines 1-27, AYANOGLU discloses:

> The procedure for locating the called mobile, selecting VCIs, checking the availability of the requested QoS, and setting up translations is explained by example. Referring to FIG. 10, a bi-directional connection setup initiated by mobile A to mobile B is illustrated. As can be seen, mobile A generates a Setup-connection message with parameters identifying the two mobiles and QoS measures, if any. The Local PBS of mobile A, which is PBS I in FIG. 10, generates a broadcast message, on VPI 100 and its assigned VCI, in order to locate the called mobile's Local PBS. In this message, besides the called mobile's address, it assigns one of its VPIs (VPI 1a) with a VCI (VCI 4) for the backward connection, i.e. from the called mobile's Local PBS to itself, as shown in FIG. 11. Assuming the called mobile B is located on PBS IV, this PBS offers the connection to mobile B. This step is needed to alert the called mobile before actually setting up the connection. If this is accepted, PBS IV responds to PBS I with a Mobile-located message in which it assigns a VPI (VPI 4a) and VCI (VCI 10) for the forward connection from PBS I to PBS IV. FIG. 11 shows that the selected VPIs for the two directions of the connection may follow different routes, i.e. pass through different intermediate PBSs. The destination PBS for each connection is assumed to manage the VCIs incoming on its VPIs. If the called mobile (mobile B) rejects the connection offer, a Connection-rejected message is sent from PBS IV to PBS I, and subsequently to the calling mobile (mobile A).

In column 11, lines 1-27, AYANOGLU, thus, discloses the transmission of a setup-connection message from a mobile node A to a portable base station I (PBS I) (column 11, lines 4-7; FIG. 10). Upon receiving the setup-connection message, PBS I assigns one of its virtual path identifiers (VPIs) with a virtual circuit identifier (VCI) for the backward connection from the called mobile node's PBS back to PBS I (column 11, lines 11-14). If the called mobile node (Mobile B) accepts the setup-connection request, the called mobile node's PBS (PBS IV) assigns a VPI and VCI for the forward connection from PBS I to PBS IV and sends the assigned VPI and VCI to PBS I in a "mobile-located" message (column 11, lines 17-21; FIG. 10). AYANOGLU, thus, discloses the assignment of VCIs independent of any QoS determination.

At column 11, lines 28-52, AYANOGLU discloses:

> Referring to FIG. II in connection with FIG. 10, it can be seen that next, both PBS I and PBS IV send the Check-QoS message in opposite directions to check for the availability of the QoS measures requested on the routes followed by VPI 4a and VPI 1a, respectively. The Check-QoS messages are sent in a hop-by-hop manner through all the PBSs in the path between the two Local PBSs for the assigned VPIs. Unlike B-ISDN signaling standards for ATM switches, inband signaling is used in this LAN to carry this Check-QoS message. Upon receiving this message, each transit PBS, such as PBS III, determines if the requested QoS measures are available. For example, if average bandwidth is one of the QoS measures specified, PBS III would check for the availability of the requested bandwidth on its outgoing port for the VPI being traced. If the requested QoS measures are available, the transit PBS passes on the in-band signaling message Check-QoS to the next PBS on the route for the VPI on which the message arrived, after reserving the required QoS measures for the given connection. The two PBSs (PBS I and PBS IV) exchange QoS-available messages upon the successful reception of the Check-QoS messages. Although the QoS parameters supported in this network have not been explicitly stated, depending on the implementation, these could include peak and average bandwidth, delay, jitter, etc.

In this section, AYANOGLU, therefore, discloses the sending of a "Check-QoS" message, in a hop-by-hop manner, from PBS IV to PBS I (column 11, lines 32-35). Each PBS in transit between PBS IV and PBS I determines if the requested QoS measures are available for the assigned VPI and, if so, passes on a "Check-QoS" message to the next PBS in the path between PBS IV and PBS I (column 11, lines 37-45). In column 11, lines 28-52, AYANOGLU, therefore, discloses the determination of the availability of requested QoS measures along a path corresponding to a *previously assigned* VPI and VCI.

At column 12, lines 28-31, AYANOGLU discloses:

> At this point, still referring to FIGS. 10 and 11, the two Local PBSs send the Set-endpoint messages communicating the VPI/VCI pair for the forward and backward connections to the two end-mobiles.

In this section, AYANOGLU discloses the communication of the previously assigned VPI and VCI for the forward and backward connections to the two end mobile nodes (i.e., mobile A and mobile B of FIG. 10).

In view of the remarks above, Applicants submit that AYANOGLU merely discloses the assignment of VCIs to a connection between mobile nodes A and B, and the subsequent determination of QoS measures for completing the connection. AYANOGLU does not disclose, or suggest, the assignment of virtual circuit identifiers to nodes in a network based on any type of QoS measurement, as appears to be alleged by the Office Action. Since AYANOGLU does not disclose assignment of VCIs based on QoS measurements, the Office Action's allegations that IWATA discloses "available cell rate as a QoS link parameter" does not remedy the deficiencies in AYANOGLU. Therefore, AYANOGLU, which discloses the assignment of VCIs to a connection prior to determining QoS measures for completing the connection, combined with IWATA, which allegedly discloses a cell rate as a QoS link parameter, does not disclose "assigning virtual circuit identifiers to nodes in the network based on whether the link data rate information indicates that the links satisfy the threshold data rate," as recited in claim 1. Since AYANOGLU and IWATA do not suggest or disclose each and every feature of claim 1, Applicants submit that the Office Action has failed to make out a *prima facie* case of obviousness. Withdrawal of the rejection of claim 1 is, therefore, respectfully requested.

Claim 3 depends from claim 1. Withdrawal of the rejection of this claim is, therefore, respectfully requested for at least the reasons set forth with respect to claim 1 above. Moreover, this claim includes additional features not suggested or disclosed by the cited references.

For example, claim 3 recites "identifying, from the link data rate information, fastest links of the links interconnecting the plurality of nodes" and "assigning virtual circuit identifiers to nodes in the network interconnected via the fastest links." The Office Action (page 4) cites column 3, lines 36-41 of IWATA for allegedly disclosing the above features. Applicants disagree.

Column 3, lines 36-41 of IWATA discloses:

> The QOS parameters include resource constraints such as available cell rate (ACR), cell transfer delay (CTD), cell delay variation (CDV) and cell loss ratio (CLR). These QOS parameters are used as a link cost for selecting an optimum path between a source and a destination.

The above section of IWATA, thus, merely discloses the use of QoS parameters, such as available cell rate, as link costs for selecting an optimum path between a source and destination. The combination of AYANOGLU, which discloses the assignment of VCIs to a connection prior to determining QoS measures for completing the connection, and IWATA, which discloses the use of available cell rate as a QoS measure, merely discloses the assignment of VCIs to a connection prior to determining a sufficient available cell rate for completing the connection. AYANOGLU and IWATA, either singly, or in combination, therefore, do not suggest or disclose "identifying, from the link data rate information, fastest links of the links interconnecting the plurality of nodes" and "assigning virtual circuit identifiers to nodes in the network interconnected via the fastest links," as recited in claim 3.

Independent claims 4, 7, 10, 13, 16 and 19 recite similar features to those discussed above with respect to claim 1 above. Withdrawal of the rejection of claims 4, 7, 10, 13, 16 and 19 is, therefore, respectfully requested for at least the reasons set forth with respect to claim 1.

Claims 6, 9, 12, 15 and 18 depend from claims 4, 7, 10, 13 and 16, respectively. Withdrawal of the rejection of these claims is requested for at least the reasons set forth with respect to claims 4, 7, 10, 13 and 16. Claims 6, 9, 12, 15 and 18 additionally recite features similar to those discussed above with respect to claim 3. Withdrawal of the rejection of claims 6, 9, 12, 15 and 18 is additionally respectfully requested for reasons similar to those set forth above with respect to claim 3.

In paragraph 7, the Office Action rejects pending claims 2, 5, 8, 11, 14 and 17 under 35 U.S.C. §103(a) as allegedly being unpatentable over AYANOGLU in view of IWATA and further in view of NARVAEZ-GUARNIERI. The Office Action (page 8) cites NARVAEZ-GUARNIERI as allegedly disclosing the "link-state routing protocol called Open Shortest Path First (OSPF)...that uses flooding techniques." However, Applicants submit that the disclosure of NARVAEZ-GUARNIERI does not remedy the deficiencies in the disclosures of AYANOGLU and IWATA noted above with respect to claims 1, 4, 7, 10 and 16, from which claims 2, 5, 8, 11, 14 and 17 depend, respectively. Withdrawal of the rejection of claims 2, 5, 8, 11, 14 and 17 is, therefore, respectfully requested.

New claims 20-23 recite a "method of assigning virtual circuit identifiers for routing data in a network comprising a plurality of nodes interconnected by links of different data rates, the method comprising: determining link data rates for links connected to a subset of the plurality of nodes; sorting the subset of nodes based on the determined link data rates to produce an ordered list of the subset of nodes; selecting a portion of the subset of nodes from a top of the ordered list; and assigning virtual circuit identifiers to the selected portion of the subset of nodes." As discussed above, AYANOGLU, which discloses the assignment of VCIs to a connection prior to determining QoS measures for completing the connection, combined with IWATA, which discloses the use of available cell rate as a QoS measure, merely discloses the assignment of VCIs to a connection prior to determining a sufficient available cell rate for completing the connection. AYANOGLU and IWATA, either singly or in combination, do not suggest or disclose "determining link data rates for links connected to a subset of the plurality of nodes," "sorting the subset of nodes based on the determined link data rates to produce an ordered list of the subset of nodes," "selecting a portion of the subset of nodes from a top of the ordered list,"

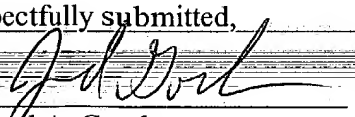
and "assigning virtual circuit identifiers to the selected portion of the subset of nodes," as recited in new claims 20-23.

In view of the above amendment, Applicants believe the pending application is in condition for allowance.

Applicant believes no fee is due with this response other than as reflected on the enclosed Transmittal. However, if a fee is due, please charge our Deposit Account No. 18-1945, under Order No. BBNT-P02-010 from which the undersigned is authorized to draw.

Dated: August 5, 2004

Respectfully submitted,

By 

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